What is claimed is:

1. A centrifugal separator for freeing a fluid from particles suspended therein, the particles having a density greater than that of the fluid, the centrifugal separator comprising:

a rotor, which is rotatable about a rotational axis;

means for rotating the rotor about the rotational axis;

a plurality of separation discs, which are arranged coaxially with the rotational axis and which delimit separation disc flow passages therebetween for through flow of the fluid; and

a spring element to compress the plurality of separation discs in the direction of the rotational axis.

2. The centrifugal separator of claim 1, further including:

a housing which surrounds the rotor, the rotor and the housing delimiting a receiving chamber for cleaned fluid as well as separated particles.

3. The centrifugal separator of claim 2, wherein the rotor has a central inlet for fluid intake at a first axial end and a central space in fluid communication with the central inlet; and

further including a fluid inlet secured to the housing, the fluid inlet in fluid communication with the central inlet of the rotor.

4. The centrifugal separator of claim 2, wherein the separation discs are supported by the rotor and the separation disk flow passages are in fluid communication with the central space in the rotor and in fluid communication with the receiving chamber.

5. The centrifugal separator of claim 1, wherein the means for rotating the rotor includes a plurality of blades coupled to the rotor and arranged in a ring around the rotational axis; and

further including at least one supply member configured to direct a driving fluid towards the plurality of blades, the impingement of the driving fluid on the blades causing the rotor to rotate about the rotational axis.

6. The centrifugal separator of claim 2, further including first and second outlets in fluid communication with the receiving chamber,

the first outlet configured to provide egress from the receiving chamber of fluid having been substantially freed from particles, and

the second outlet configured to provide egress from the receiving chamber of particles having been substantially separated from the fluid.

7. The centrifugal separator of claim 6, wherein the separation disk flow passages are in fluid communication with the receiving chamber, and

the first outlet is situated below where the separation disk flow passages are in fluid communication with the receiving chamber.

8. The centrifugal separator of claim 6, wherein the second outlet is situated below the rotor and substantially aligned with the rotational axis.

9. The centrifugal separator of claim 6, wherein the receiving chamber is configured to direct the separated particles toward the second outlet.

10. The centrifugal separator of claim 6, wherein the housing includes a tapered section that tapers towards the second outlet and the first outlet is situated in the tapered section of the housing.

11. The centrifugal separator of claim 1, wherein the plurality of separation disks includes a stack of substantially conical discs.

12. The centrifugal separator of claim 11, wherein the substantially conical separation discs each have an apex end and a base end, and the base ends of the separation discs face axially towards the central inlet of the rotor.

13. The centrifugal separator of claim 11, wherein each substantially conical separation disc has several central through openings forming together with interspaces between the separation discs the central space of the rotor.

14. The centrifugal separator of claim 5, further including

a housing which surrounds the rotor, the rotor and the housing delimiting a receiving chamber for cleaned fluid as well as separated particles,

wherein the housing is configured such that the driving fluid, upon leaving the plurability of blades, is conducted into the receiving chamber.

15. The centrifugal separator of claim 5, wherein the rotor has a central inlet for fluid intake at a first axial end and a bowl-formed end wall having a concave outer surface at the first axial end, and

the plurality of blades is supported at a radially outer edge portion of the bowl-formed end wall.

16. The centrifugal separator of claim 25, wherein the separation discs are supported by the rotor and include a stack of substantially conical separation discs each having an apex end and a base end, the base ends facing axially towards the bowl-formed end wall.

17. The centrifugal separator of claim 1, further including

a stationary supporting member;

a bearing;

a shaft connected to the rotor and supported by the stationary supporting member via the bearing;

an annular space defined around the rotational axis and situated between the stationary supporting member and the means for rotating the rotor; and

a fluid inlet which extends through the annular area and is in fluid communication with the central inlet of the rotor.

18. The centrifugal separator of claim 1, wherein the spring element is a helical compression spring.

19. The centrifugal separator of claim 1, wherein the spring is secured to the rotor with a screw.